

JPL Subcontractor Environmental, Health, and Safety Requirements

(RFP/ITB/PO Attachment B-17)

1.0 Introduction

- 1.1 Subcontractor shall take all reasonable measures in the performance of the work under this Subcontract to protect the safety and health of Subcontractor's employees and lower-tier subcontractors, JPL employees, and members of the public who might be affected by Subcontractor's work. This document describes JPL-specific environmental, health and safety requirements ("JPL EH&S Requirements") that Subcontractor must comply with in performing work under the Subcontract.
- 1.2 Subcontractor shall comply with these JPL EH&S Requirements and all applicable federal, state and local environmental, health and safety laws and regulations, and any other safety and occupational health measures (collectively, "Applicable EH&S Standards"). Subcontractor shall ensure all lower-tier subcontractors are aware of and in compliance with Subcontractor's approved safety and health program and as well as all applicable EH&S Standards. Subcontractor shall include the substance of this document in all lower-tier subcontracts issued under the Subcontract. JPL may notify the Subcontractor in writing of noncompliance with an Applicable EH&S Standard. Subcontractor shall promptly implement any corrective measures and report in writing to JPL on the actions taken.

Note: *This document is not intended to and does not contain a comprehensive listing of all Applicable EH&S Standards. It addresses JPL EH&S Requirements and certain Applicable EH&S Standards applied at JPL. In addition to complying with this document as part of the Subcontract, Subcontractor remains responsible for determining for itself which laws and regulations apply to its work under the Subcontract and for complying therewith.*

- 1.3 Unless otherwise indicated in this document, Subcontractor shall submit all deliverables specified, including but not limited to those listed in Section VI in a **Safety Manual**, to the JPL Subcontracts Manager within the timeframe specified.

2.0 Safety Requirements

2.1 General

- 2.1.1 Subcontractor is responsible for ensuring that its employees and lower-tier subcontractors know of the hazards associated with any specific task performed under the Subcontract. Subcontractors must require all employees who will perform work at JPL to watch one of the following Safety Awareness videos applicable to

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the work/classification PRIOR to start of work at JPL Oak Grove facility:

- Construction Worker
- Construction Supervisor
- Category A/Consultants and all classifications other than Construction

These videos can be accessed under the *Supporting Documents* tile at <http://www.jpl.nasa.gov/acquisition/terms-conditions/>.

- 2.1.2 Subcontractor is responsible for providing all safety equipment and personal protective equipment appropriate for the task. Subcontractor is responsible for providing required medical clearance and training for its employees.
- 2.1.3 Subcontractor is responsible for maintaining a safe job site and job site perimeter and for providing traffic controllers for both vehicle and pedestrian traffic when the normal traffic pattern is interrupted by facilities or construction activities at any worksite. Traffic controllers and all other Subcontractor personnel working in roadways shall wear high-visibility vests. Subcontractor shall provide necessary barricades, hazard warning tape, traffic signs, and trench cover plates for pedestrians and vehicles.
- 2.1.4 Any use of JPL-owned emergency equipment and fire hydrants for other than emergency purposes is prohibited, unless specific approval is first obtained from the JPL Construction Administrator.
- 2.1.5 Subcontractor personnel shall maintain a state of cleanliness and orderliness in work areas at all times. Stock items, furniture, equipment, interior decoration, vehicles, debris, or other substantial physical objects shall not be placed or stored temporarily, or permanently, in a path of emergency travel (i.e., corridor, exit door, stairway, or point of exit discharge), without the approval of the JPL Fire and Life Safety Authority having jurisdiction. Hallways, doorways, stairwells, lobbies, and areas beneath stairs shall be maintained free of trash and debris and shall not be used as storage space. No object shall be located in such a manner as to prevent access to, or use of, fire protection equipment (i.e., fire extinguisher, fire alarm pull stations, hydrants, fire hose outlets, sprinkler valves, or Fire Department connections).
- 2.1.6 This provision is applicable during the period that proposals are evaluated under the provisions of the solicitation. The proposer and its lower-tiers must complete and submit JPL form titled ***“Experience Modification Rate (EMR) Form”*** which includes the past three years’ EMR, OSHA Recordable/Lost-Time Incidents Rate Form. This data will be reviewed by the JPL Occupational Safety Program Office (OSPO) for acceptability. JPL strives to ensure that all Subcontractors have a current workers’ compensation EMR between 0.8 and 1.0. A proposer or lower-tier subcontractors with an unacceptable rate is likely to be eliminated from award

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consideration. JPL may, on an exception basis, permit further consideration with an EMR greater than 1.0. Such further consideration would be subject to the submission and evaluation of a written plan of action to address the proposer's unfavorable EMR and a detailed hazard assessment relative to the proposed scope of work. Additionally, the proposer may be asked to provide OSHA Citation History - - the number of OSHA recordable injuries/illnesses per year for the past three years, the number of lost-time injuries/illnesses for the past three years, the annual OSHA recordable cases rates and lost-time case rates for the past three years. Any proposer would need to have both a total recordable case rate and cases with days away from work, job transfer, or restriction rate equal to or less than the current national average for the subcontractor's respective North American Industry Classification System number (NAICS) published by the Federal Bureau of Labor Statistics.

2.2 Fire Protection

- 2.2.1 If work is required on a JPL fire protection system, Subcontractor shall contact the Construction Administrator to work with the JPL Fire Department or the JPL AHJ to turn off, or turn on the fire protection system. *No personnel shall be permitted to operate a fire protection system other than the JPL Fire Department or a C-16 Licensed contractor under the supervision of the JPL AHJ.*
- 2.2.2 Any impairment of a fire protection system that lasts longer than 8 hours shall be documented by Subcontractor using written records for approval through the Construction Administrator.

2.3 Emergencies / Incidents and Mishap Reporting

- 2.3.1 Dial 911 from any JPL phone in the event of an emergency, from any JPL phone dial 911. Dial 818-393-3333 or 818-354-3333 from a cell phone or non-JPL phone. Be prepared to provide the following information to the operator: your name, company, the nature of the problem and the location. Stay on the line until you are told to hang up. JPL Fire Department emergency personnel will be dispatched to the site. For work being performed at Goldstone or Table Mountain Facility, refer to specific local emergency procedures at those facilities.
 - 2.3.1.1 The Construction Administrator shall be the initial point of contact for all mishaps and close calls, and will work with the Occupational Safety Program Office (OSPO).
 - 2.3.1.2 ***Mishap Reports*** shall be reported in accordance with the time requirements as specified in Table 1.
 - 2.3.1.3 The ***Mishap Report*** may be submitted using the Subcontractor's own

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mishap form or the Subcontractor may contact OSPO for a template Contractor/Other form. If using a Subcontractor-provided form, ensure all required information is included.

- 2.3.2 Notify the OSPO via the Immediate Mishap and Close Call (IMACC) Reporting Line (818-354-2141) within 1 hour from the time of incident, following a Type A, B, C (hospitalization for inpatient care of one or two people), high visibility mishap, or high visibility close call.
- 2.3.3 Immediately (within 8 hours of date and time of incident) report all mishaps and close calls to the JPL Construction Administrator and OSPO (see Table 1).
- 2.3.4 All mishaps shall be investigated to the extent necessary to determine the Proximate causes, Root Causes, Corrective Actions and Lessons Learned.
 - 2.3.4.1 The initial **Mishap Report** must include:
 - Detailed Incident Description
 - Mishap Reporting Classification (per Table 1)
 - Date and Time of Incident
 - Investigative findings
 - Initial corrective actions
 - Proposed and/or completed corrective actions
 - Lessons learned.
- 2.3.5 For Lost Time and Restricted Duty cases please include the start and end dates.
- 2.3.6 A detailed follow-up report must be submitted to the Construction Administrator within twenty-four (24) hours from time of mishap, and subsequent report(s) must be submitted to the Construction Administrator if additional information becomes known by Subcontractor and/or until all information required above has been provided.
- 2.3.7 A detailed follow-up report must be submitted to the Construction Administrator and OSPO) within twenty-four (24) hours from time of mishap, and subsequent report(s) must be submitted to the Construction Administrator if additional information becomes known by Subcontractor and/or until all information required above has been provided.
- 2.3.8 **Mishap Reports** shall be completed by the submitter within 30 work days.

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Note: *If mitigating circumstances (i.e., corrective actions are not complete, subcontractor still on lost time, final cost not available) are present and a mishap cannot be closed within the prescribed time frame, the **Mishap Report** shall be reviewed and submitted with any updates every 30 days until all corrective actions are closed.*

2.4 Corrective Action Plan (CAP) and Lessons Learned

- 2.4.1 For incidents requiring a **Mishap Report**, a draft CAP shall be development by the subcontractor and provided to OSPO within 2 work days of development.
- 2.4.2 The subcontractor **shall** develop lessons learned from the incident.
- 2.4.3 The subcontractor shall develop proximate cause for the incident.

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Table 1: Mishap Reporting Classification and Reporting Requirements <i>JPL Mishap Reporting Classifications and their associated definitions.</i>			
Classification Level	Injury	Property Damage	Reporting Time Requirements to OSPO
Type A Mishap	Occupational injury or illness that resulted in: A fatality, or A permanent total disability	Total direct cost of mission failure and property damage equal to or greater than \$2,000,000 or more.	Immediate telephonic notification (within 1 hour) of date and time of incident to the OSPO at 818-354-2141 The subcontractor must work with OSPO prior to the initial written Mishap Report being submitted within 8 hours from date and time of incident Note: Subcontractors are responsible for Cal/OSHA notification. Notify OSPO of the report to Cal/OSHA.
Type B Mishap	Occupational injury or illness that resulted in a permanent partial disability, or Hospitalization for	Total direct cost of mission failure and property damage equal to or greater than \$500,000 but less than \$2,000,000.	Immediate telephonic notification (within 1 hour) of date and time of incident to the OSPO at 818-354-2141 The subcontractor must work with OSPO prior to the initial written Mishap Report being submitted within 8 hours from date and time of incident Note: Subcontractors are responsible for Cal/OSHA notification. Notify OSPO of the report to

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	inpatient care of three or more people within 30 workdays of the mishap.		Cal/OSHA.
Type C Mishap	Nonfatal occupational injury or illness that resulted in: Days away from work, not including the day or shift on which it occurred, or Restricted work, or transfer to another job not including the day or shift	Total direct cost of mission failure and property damage of at least \$50,000 but less than \$500,000.	The subcontractor shall submit an initial written Mishap Report within 8 hours from date and time of incident The subcontractor should notify OSPO (within 1 hour) from date and time of incident to OSPO at 818-354-2141 when "Hospitalization for inpatient care of one or two" Note: Subcontractors are responsible for Cal/OSHA notification. Notify OSPO of the report to Cal/OSHA.

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	<p>on which it occurred,</p> <p>or</p> <p>Hospitalization for inpatient care of one or two</p> <p>people within 30 workdays of the mishap.</p>		
Type D Mishap	Any nonfatal Cal/OSHA recordable occupational injury and/or illness that does not meet the definition of a Type C mishap.	Total direct cost of mission failure and property damage equal to or greater than \$20,000 but less than \$50,000.	<p>The subcontractor shall submit an initial written Mishap Report within 8 hours from date and time of incident</p> <p>Or</p> <p>If the subcontractor has any questions they should call OSPO at 818-354-2141 (within 8 hour) from date and time of incident</p>
Close Call	An event in which there is no injury or only minor injury requiring first aid, but which possesses a potential to cause a	An event in which there is no equipment or property damage, or minor equipment property damage of less than \$20,000, but	<p>The subcontractor shall submit an initial written Mishap Report within 8 hours from date and time of incident</p> <p>Or</p> <p>If the subcontractor has any questions they should call</p>

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	mishap.	which possesses a potential to cause a mishap.	OSPO at 818-354-2141 (within 8 hour) from date and time of incident
High Visibility (Mishaps or Close Calls)	Those particular mishaps or close calls, regardless of the amount of property damage or personnel injury, that the Administrator, Chief/OSMA (Office of Safety & Mission Assurance), CD (Center Director), AA/OIA (Assistant Administrator/Office of Infrastructure and Administration) or the Center Office of Safety and Mission Success (OSMS) Director judges to possess a high degree of programmatic impact or public media, or political interest including, but not limited to, mishaps and close calls that impact flight hardware, flight software, or completion of critical mission milestones.		Immediate telephonic notification (within 1 hour) of date and time of incident to the OSPO at 818-354-2141. The subcontractor must work with OSPO prior to the initial written Mishap Report being submitted (within 1 hour) from date and time of incident

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Hazardous Material Use

- 2.4.4 Before hazardous materials are brought on to any JPL site, two (2) copies of all **Material Safety Data Sheets (MSDS)** shall be submitted by Subcontractor in the **Safety Manual** for review by the appropriate OSPO and JPL Environmental Affairs Program Office (EAPO) representatives. Where hazardous materials are used at the job site, Subcontractor is responsible for contacting the Construction Administrator for **MSDS** related to hazardous materials used at the job site.
- 2.4.5 Subcontractor shall immediately report all spills to the Construction Administrator. If the spill results in an immediate hazard to personnel or property, Subcontractor shall call the on-Lab JPL Emergency number (911) for assistance. Subcontractor is responsible for containing and cleaning up all spills when directed based upon a determination of the hazard made by the JPL Fire Department.
- 2.4.6 If Subcontractor brings radioactive sources and/or x-ray equipment on site to JPL, a request shall be made to the Construction Administrator for review. Requests shall be made at least five business days prior to bringing such materials and/or equipment to JPL. Subcontractor bringing radioactive materials and/or machines/equipment utilizing ionizing radiation shall complete and submit Form JPL 7135, "Radioactive Materials Use Authorization Request" and JPL Form entitled "Radiation Machine Use Authorization Request," both located under the *Supporting Documents* tile at <http://www.jpl.nasa.gov/acquisition/terms-conditions/> to the Construction Administrator. Once the request is granted, Subcontractor may bring these onsite.

2.5 Asbestos Containing Material (ACM)

- 2.5.1 Asbestos Notification Memorandum, Form 2895 which identifies buildings known to contain friable asbestos containing material is incorporated into this Subcontract. Subcontractor shall distribute the notice to its personnel prior to starting any work. It is the responsibility of Subcontractor to ensure that all precautions are taken to avoid exposure of Subcontractor personnel, lower tier subcontractor personnel, and JPL employees to these materials if Subcontractor personnel will perform any work in areas where ACM is or might be present. Subcontractor shall request the Construction Administrator provide an asbestos report identifying the specific locations of the ACM.
- 2.5.2 OSPO shall review all subcontractor **Work Plans** for asbestos-related operations (Class I, II, III or IV) as defined in Title 8, California Code of Regulations (8CCR1529). If the Subcontractor will access a ceiling plenum where ACM is present in the ceiling tiles, fireproofing on building structural members such as I-beams and/or thermal system insulation on pipes and a likelihood exists that ACM will be disturbed, the Subcontractor shall include detailed procedures in the **Work Plan** of the precautions to be implemented to protect its personnel and the surrounding areas prior to, during and

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after access. The **Work Plan** shall also include detailed procedures for cleanup in the event of an accidental disturbance of ACM. If Subcontractor performs abatement work, Subcontractor first shall submit an **Asbestos Abatement (AA) Work Plan** in the **Safety Manual**. The **AA Work Plan** shall consist of a detailed and comprehensive work description relating to the asbestos abatement and waste disposal activities.

- a. Upon request, Subcontractor shall provide copies of appropriate worker training, respirator training and fit testing, medical surveillance certificates, permits, daily logs, air monitoring data and laboratory analysis reports to the Construction Administrator.
- b. If Subcontractor discovers during the course of work unanticipated Presumed Asbestos Containing Material (PACM) and/or ACM, Subcontractor shall stop work immediately and notify the Construction Administrator at once with information regarding the location and quantity.
- c. When Subcontractor performs asbestos abatement, Subcontractor shall provide area/clearance air monitoring reports to the Construction Administrator prior to re-occupancy.

2.6 “Hot Work” Permits

Prior to starting any hot work (e.g. welding, cutting, tar kettle use or other significant ignition source), a **Hot Work Permit** must be obtained through the Construction Administrator.

2.7 Trenches and Excavations

- 2.7.1 Subcontractor shall review all underground utility drawings with the Construction Administrator prior to any excavation or trenching operations. A completed **JPL Excavation Permit** shall be obtained from the Construction Administrator prior to any digging operation (exception for hand digging 12 inches). Subcontractor shall submit a copy of its **Cal/OSHA Annual Permit and Written Notice to Dig** in the **Safety Manual**.
- 2.7.2 Subcontractor shall submit a **Trenching and Shoring Plan** for trenches and excavations deeper than five feet in the **Safety Manual**. If a trench or excavation will be deeper than 20 feet, a plan shall be completed and signed by a Professional Engineer (PE) registered in the State of California.
- 2.7.3 During any excavation, if an inadvertent discovery of human remains, funerary objects, sacred objects, or cultural artifacts on JPL facilities occurs, excavation must cease

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immediately. Notification of such inadvertent discovery must be given to the Construction Administrator immediately following discovery.

2.8 Elevated Work Surfaces

- 2.8.1 A copy of Subcontractor's current Cal/OSHA permit for all scaffolding (erection or dismantling) over 36 feet shall be submitted in the Safety Manual.
- 2.8.2 When there is a potential fall of 6 feet or more, Subcontractor shall utilize one or more of the following means of protection: guardrail system, personal fall arrest system, safety monitoring system, Safetynet system, warning line system, or covers. Selection of the means to protect personnel will be reviewed by OSPO in advance of the work. On elevated surfaces, such as roofs contractors shall use fall protection if within 15 feet from an unprotected edge.

2.9 Lifting Operations and Lifting Permit

- 2.9.1 For any mobile lifting and elevating operations, Subcontractor shall submit both a completed **"Lift Permit", Form 7118** located at <http://acquisition.jpl.nasa.gov/> and a **"Lift Plan"** to the Construction Administrator a minimum of five business days in advance. The **Lift Plan** shall include:
- Date, time and location of the lifting operation
 - Indicate whether Subcontractor is providing the crane or the name of the crane company, if different
 - Current annual & quadrennial crane certificates
 - Operator's license that meets the requirements of section 5006.1 ("Mobile Crane and Tower Crane-Operator Qualifications and Certification") of the Cal OSHA General Industry Safety Orders
 - Size and type of mobile crane
 - Safe work plan: description of work, crew, equipment and personal protective equipment, risk assessment, and preventive measures
 - Diagram of the staging and work area
 - Name of JPL Construction Administrator
- 2.9.2 OSPO will review Subcontractor's **Lift Plan** and issue a permit as needed. The permit may require Subcontractor to comply with certain conditions, including posting notices of roadway closures. The JPL Lifting Devices Manager will review the **Lift Plan** for work involving JPL Critical Items (JCI).

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- 2.9.3 Subcontractor shall maintain a safe perimeter around all lifting and elevating operations. All roadways and personnel access points in or near the lifting operation must be blocked or cordoned off and Subcontractor personnel posted at the periphery of posted areas to prevent pedestrians from entering into the hazard zone.

2.10 Confined Space Entry

- 2.10.1 The confined spaces found at JPL include, but are not limited to:
- Manholes
 - Cooling towers
 - Elevator pits
 - Ground tanks (underground and above ground)
 - Underground tunnels
 - Environmental test chambers
- 2.10.2 Subcontractor shall submit a copy of its **Confined Space Program for Permit and Non-permit** as required confined space entries in the **Safety Manual**.
- 2.10.3 Subcontractor must provide a **“Confined Space Entry Permit”, Form 2702** located under the *Supporting Documents* tile at <http://www.jpl.nasa.gov/acquisition/terms-conditions/> to allow and control entry into a confined space required such permit, in accordance with 8CCR5157.
- 2.10.4 Subcontractor shall provide 24-hour advance notice to the Construction Administrator prior to scheduling entry into a confined space.
- 2.10.5 Subcontractor shall be responsible for testing, classifying and permitting spaces as permit-required or non-permit required confined space entries, and providing appropriate test equipment and standby rescue personnel and equipment.

2.11 Flight Program/Project Safety

- 2.11.1 If the Subcontract involves flight project work, Subcontractor shall include in each **Program/Project Plan** prepared for a flight project a description of the risk management process that addresses the safety needs and special safety monitoring required for the flight program/project.
- 2.11.2 **Project Plans** containing such requirements will be referenced in the Contract Data Requirements List (CDRL) issued by the Subcontracting Officer under the

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Caltech/NASA Prime Contract. Subcontractor shall comply with any such requirements.

2.12 Electrical Safety/Arc Flash Hazard Protection

- 2.12.1 Subcontractor shall submit an **Electrical Safety Plan** in the **Safety Manual**.
- 2.12.2 Energized Electrical Work Permit- If electrical equipment operating at 50 volts or more (phase to ground) cannot be de-energized due to the equipment design or operational limitations, work to be performed shall be considered energized electrical work and shall be performed by a written **“Energized Electrical Work Permit”, Form 7029**, located under the *Supporting Documents* tile at <http://www.jpl.nasa.gov/acquisition/terms-conditions/>.
- 2.12.3 Only qualified electrical personnel holding a valid certification issued by the State of California are permitted to perform any installation, wiring, trouble shooting or repair of electrical equipment.
- 2.12.4 Subcontractor personnel performing work on, or associated with, exposed lines or equipment energized at 50 volts or more shall have first aid training including cardiopulmonary resuscitation (CPR). Subcontractor personnel shall be certified annually to perform CPR, and first aid training shall take place once every three years.

2.13 Lockout/Tagout/Blockout

- 2.13.1 Subcontractor shall submit its **Lockout/Tagout/Blockout Program** to perform any maintenance and servicing of machinery, equipment, or energy source(s) in the **Safety Manual**.
- 2.13.2 Subcontractor shall ensure that a machine/equipment-specific lockout/tagout/blockout procedure is established in writing prior to performing any maintenance and/or servicing of machinery, equipment, or energy source(s), and shall ensure compliance to the procedure by its employees.
- 2.13.3 For the purposes of lockout/tagout/blockout, only red padlocks shall be used. Locks shall be individually keyed.
- 2.13.4 Locks shall be installed with a Lockout tag that has the name and phone number of the Authorized Individual installing the lock.
- 2.13.5 Each lock shall have a primary key. The primary key shall, at all times, be in the possession of the Authorized Individual that applied the lock.

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2.14 Human Factors

As defined by NASA, Human Factors is a multi-disciplinary effort to acquire knowledge about people at work and apply that knowledge to the functional relationships between people, tasks, technologies, and environment for safe and efficient human performance. Occupations requiring prolonged or unusual work schedules may impact employee's health, safety, work quality, and program/project activity schedule. JPL gives high priority to addressing potentially detrimental impacts of unusual or varying work times to create a safe, healthy work environment, and minimize undesirable outcomes. If Subcontractor personnel will be working greater than 60 hours over a two-week period, Subcontractor shall develop human factors mitigation procedures and provide them to the Construction Administrator as requested.

2.15 Hearing Conservation

Note: *The Hearing Conservation requirements below are not applicable to construction work.*

- 2.15.1 Subcontractor shall comply with the NASA Hearing Conservation requirements specified in NPR 1800.1C, NASA Occupational Health Program Procedures, Section 4.8 for its personnel. Access this document at: <http://nodis3.gsfc.nasa.gov/>.
- 2.15.2 Subcontractor shall maintain a **Hearing Conservation Program and Performing Noise Monitoring** as required by NPR 1800.1C.
- 2.15.3 Subcontractor shall provide a copy of its written **Hearing Conservation Program**, training records, and evidence of annual audiograms, if requested.

2.16 Ground Based Pressure Vessels and Systems

Access - The JPL Pressure Systems Manager, the pressure vessel and/or system (P/VS) owner's Inspector and the Inspector's delegates shall have access to any place where work concerned with pressure vessels or pressurized systems (PV/S) is being performed. This includes manufacture, fabrication, heat treatment, assembly, erection, examination, and testing of the PV/S. The JPL Pressure Systems Manager shall have the right to audit any examination, to inspect the piping using any examination method specified by the engineering design, and to review all certifications and records necessary to ensure that the current applicable Building Code and NPD 8710.5 (dated 3/12/2008) requirements are met.

2.17 Boom Lift Parking and Storing

Subcontractor shall adhere to the parking and storing requirements for boom lifts listed below:

- Select a safe parking location with a firm level surface clear of obstruction and traffic

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- Lower the boom to the stowed position, rotate the turntable so the boom is between the non-steering wheels
- Turn the key switch to the off position and remove the key to secure from unauthorized use
- Chock the wheels.

3.0 JPL Safety Reporting

- 3.1 Safety concerns may be reported by calling Immediate Mishap and close call (IMACC) Reporting Line (24/7)-818-354-3141 or the Anonymous Hazard Reporting Hotline at 818-393-6483.

4.0 NASA Safety Reporting System (NSRS)

- 4.1 The NASA Safety Reporting System (NSRS) is an anonymous, voluntary, and responsive reporting channel to notify NASA's upper management of concerns about hazards. Any NASA employee, Subcontractor employee, or Subcontractor working in support of NASA may use the NSRS to report safety concerns. The NSRS is designed to supplement local hazard reporting channels. Any hazards or safety concerns should be reported using established safety reporting procedures.

We encourage all subcontractors to report safety concerns by using the JPL Safety reporting process as noted above in Section III as the first step.

5.0 Environmental Requirements

5.1 Hazardous Waste

Note: Subcontractor shall not use JPL trash containers for any type of disposal. All general trash is the responsibility of the Subcontractor except as noted in Section C, below.

Note: Unless otherwise specified in the Subcontract, Subcontractor shall remove all containers with unused chemicals that are not waste from the site, including partially full containers of adhesive, solvent, paint, roofing tar, etc. Disposal of partially or completely filled chemical containers at JPL is prohibited.

- 5.1.1 Subcontractor is responsible for properly segregating hazardous waste. Subcontractor shall maintain *all* hazardous waste containers located on the work site in a manner which conforms to the Resource Conservation and Recovery Act, and applicable state laws.

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- 5.1.2 Subcontractors shall supply its own roll off bins and drums for hazardous waste accumulation and transport. All roll off bins and drums must be D.O.T. compliant.
- 5.1.3 Subcontractor shall ensure all hazardous waste is properly identified and put into the properly labeled container. All containers should remain closed except when adding waste to the container. Accumulate hazardous waste indoors. Keep hazardous waste containers near the point of generation. Segregate waste by type to prevent co-mingling; flammable, corrosive, toxic, or reactive.
- 5.1.4 Subcontractor shall coordinate with the Construction Administrator for approval of any hazardous waste accumulation, transport or disposal. *Subcontractor is responsible for off-site disposal of hazardous waste.*
- 5.1.5 Subcontractor shall schedule hazardous waste collection by calling the EAPO Representative when the *quantity limitation of the container is reached, or within nine (9) months of the waste accumulation start date on the 2799-S hazardous waste label, whichever occurs first. Up to 55 gallons of the same type of hazardous waste, or one quart of acutely hazardous waste at the point of generation may be accumulated for up to nine (9) months, or when the quantity limitation of the container is reached, whichever occurs first.*
- 5.1.6 Subcontractor shall prepare **Hazardous Waste Manifests, Land Disposal Restriction Forms and Profiles**, and send copies of the documents for approval to the EAPO Representative at least 72 hours prior to scheduled transport. *Only the EAPO Representative or designee has the authority to sign manifests for loads of hazardous waste or acutely hazardous waste.*
- 5.1.7 Subcontractor shall manage all empty hazardous materials containers greater than five (5) gallons, and empty extremely hazardous waste containers, as hazardous waste.
- 5.1.8 Fluorescent light tubes shall be managed as a hazardous waste (universal waste), boxed, and sent to the rear of Building 305.

5.2 Air Quality

- 5.2.1 Subcontractor shall post equipment operating permits as necessary. Contact the Construction Administrator for any questions regarding proper permitting requirements.
- 5.2.2 Contaminated wipes shall be disposed of as hazardous waste. Used or contaminated rags shall be contained when not in use.

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- 5.2.3 Subcontractor shall use compliant paint gun(s). Prior to use of paint gun(s), contact the Construction Administrator to ensure the use of paint gun(s) has been approved and/or is appropriate to use.
- 5.2.4 JPL falls under the South Coast Air Quality Management District requirements; therefore all Subcontractors shall use material compliant with this District's rules and regulations.
- 5.2.5 Subcontractor shall report usage and emissions from their internal combustion engines directly to the South Coast Air Quality Management District as required if operated under 72 hours/quarter, and shall provide name, address and type of work performed to the EAPO Representative AND Construction Administrator.

Note: *Monitoring and reporting of the duration of operating time and emissions from equipment operated by Subcontractors is not required if the equipment is exclusively used for the following purposes that do not contribute to the manufacturing process: landscaping and grounds maintenance, maintenance and repair of structures, equipment, and their appurtenances, construction and demolition, or environmental investigation, testing, and remediation.*

5.3 Trash and Recyclable Material

- 5.3.1 If Subcontractor construction activity is expected to generate debris in excess of 10 cubic yards over the course of the activity, Subcontractor shall contact the Construction Administrator. Subcontractor shall procure a separate dumpster specified for the debris and arrange for its disposal. Plant material and soil shall be disposed of by the Subcontractor and not placed in JPL bins, except for:
- scrap metal is allowed in the JPL scrap metal roll-off bin.
 - cardboard waste is allowed in the JPL cardboard bin.

5.4 Wastewater

- 5.4.1 Prior approval must be obtained from the EAPO Representative or designee before Subcontractor washes any material into the sanitary sewer system.
- 5.4.2 Subcontractor shall under no circumstances wash any materials outside without prior approval from the EAPO Representative or designee.
- 5.4.3 All chemical containers greater than five (5) gallons shall have secondary containment

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and be covered when stored outside.

5.5 Soil

- 5.5.1 Subcontractor shall contact the Construction Administrator for pre-approval of all disposal sites to which JPL soil and asphalt is sent.
- 5.5.2 In case of an unusual odor or color in the soil, Subcontractor shall contact the Construction Administrator for resolution determination.
- 5.5.3 All soil storage piles must be covered by plastic unless exempted by the EAPO Representative or designee. If Subcontractor requests soil storage piles remain uncovered, Subcontractor will contact the Construction Administrator for a determination.

5.6 Chemicals Brought On Premises

- 5.6.1 No ozone depleting chemicals allowed for cleaning purposes may be used at JPL. For a listing of such chemicals see <http://www.epa.gov/ozone/science/ods/classone.html>
- 5.6.2 No NESHAP Halogenated Solvents allowed for cleaning purposes may be used at JPL as follows: Carbon Tetrachloride, Chloroform, Methylene Chloride, Perchloroethylene, Trichloroethylene, and 1-1-1-Trichloroethane.
- 5.6.3 Restricted use of Volatile Organic Compounds (VOC) for cleaning purposes: Subcontractor shall contact the Construction Administrator for prior authorization to use any VOC at JPL.
- 5.6.4 The EAPO Representative or Construction Administrator will review Subcontractor chemical information and advise Subcontractor on the proper disposal of the container per JPL requirements for all targeted chemicals procured or otherwise brought on premises by Subcontractor. Subcontractor must provide a ***list of the identified chemical(s)*** along with the MSDS in the Safety Manual.

6.0 Safety Manual Documentation

Note: To the extent required by Applicable EH&S Standards above, the mandatory documents listed below shall be provided to the JPL Subcontracts Manager in a **Safety Manual** at least 10 days prior to start of work.

- **Injury and Illness Prevention Program (IIPP)**, including applicable documentation referenced herein. (8CCR 3203)

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- **Experience Modification Rate (EMR)**
- **Hazardous Communication Program.** (8CCR 5194)
- **Site Specific Safety Plan**, detailing procedures for site specific activities. (8CCR 3203 & 1509).
A sample **Site Specific Safety Plan** is found under the *Supporting Documents* tile at:
<http://www.jpl.nasa.gov/acquisition/terms-conditions/>.
- A **Fall Protection Plan (FPP)** shall be submitted when personal fall protection equipment is used.
The FPP The fall protection plan shall be prepared by a qualified person and developed specifically for the site where the construction work is being performed shall identify (1) the contractor onsite fall protection competent person, (2) anchors and (3) other fall protection equipment being used.
- **Site Specific Permits** (i.e., trenching and shoring (8CCR1503); **Confined Space Entry** (8CCR5157); **Asbestos Abatement Notification** (8CCR1529), as required.
- Required certifications and/or training records of employees as referenced in this document. (8CCR3203)
- Medical approval to wear respiratory protection. (8CCR1531, 5144)
- Medical approval to work with, but not limited to asbestos, cadmium and lead. (8CCR1529, 1532 & 1532.1)
- **Hearing Conservation Program** (8CCR 5095-5100)
- **Bloodborne Pathogens Program** (8CCR 5193)
- **Respiratory Protection Program** (8CCR 3409 and 5144)
- **Heat Stress Program** (8CCR 3395)
- **Lockout/Tagout/Blockout** (8CCR, 3314).
- Baseline medical eye exam for Class 3B and 4 laser users. (ANSI Z136.1, Section 6.3.1)
- Training Documentation: Proof of training in the following areas for all applicable personnel working on the job site:
 - asbestos and lead
 - confined space
 - hazard communication
 - fall protection
 - mobile crane operations
 - scaffold erection/dismantling
 - respiratory protection
 - power-actuated tools
 - industrial/lift trucks (forklifts) and tractors
 - electrical
 - elevating work platforms and aerial devices
 - excavation
 - lockout/tagout/blockout

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- heat stress
- roofing operations
- welding and cutting safety
- LASER
- ladders